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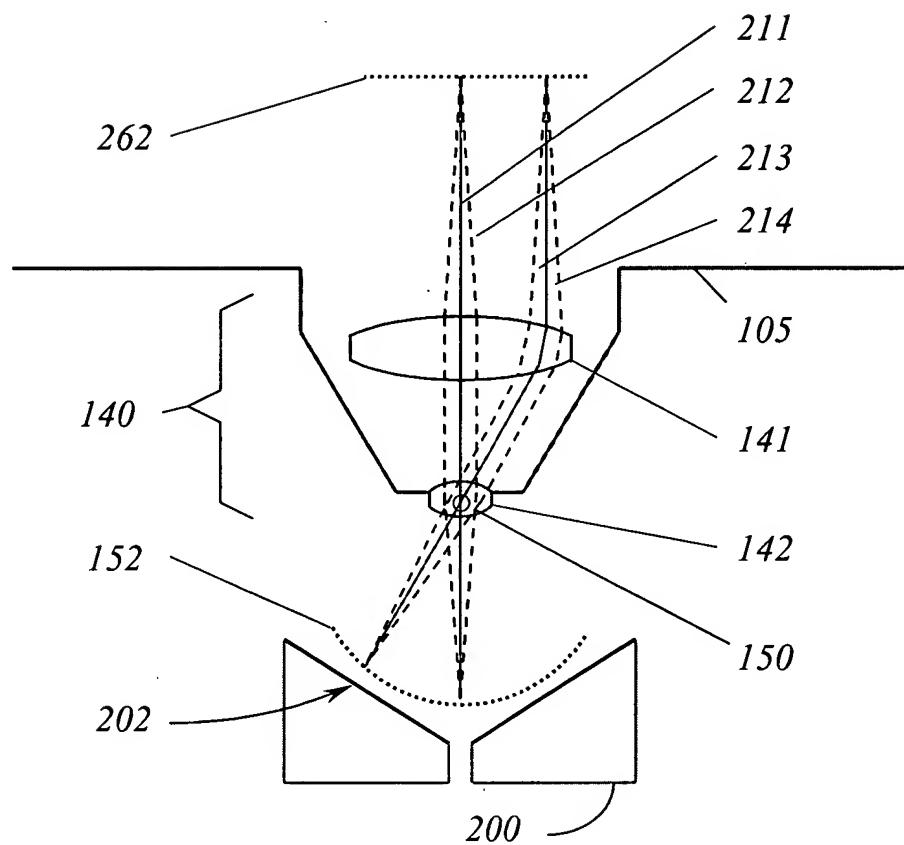


FIG. 2A

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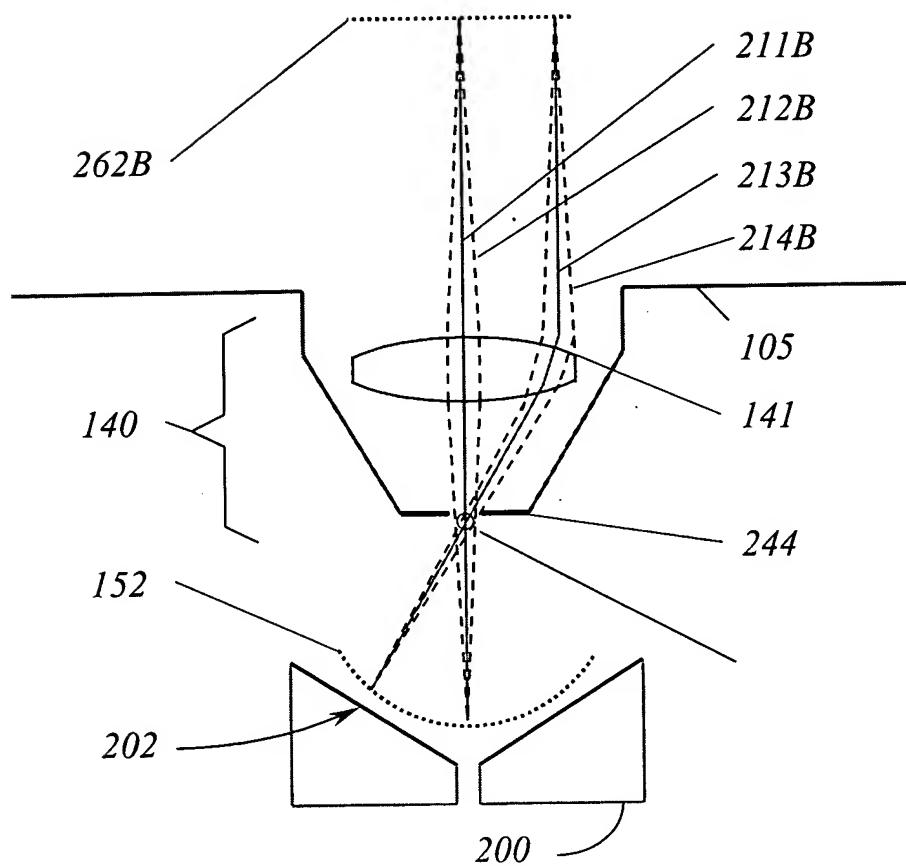


FIG. 2B

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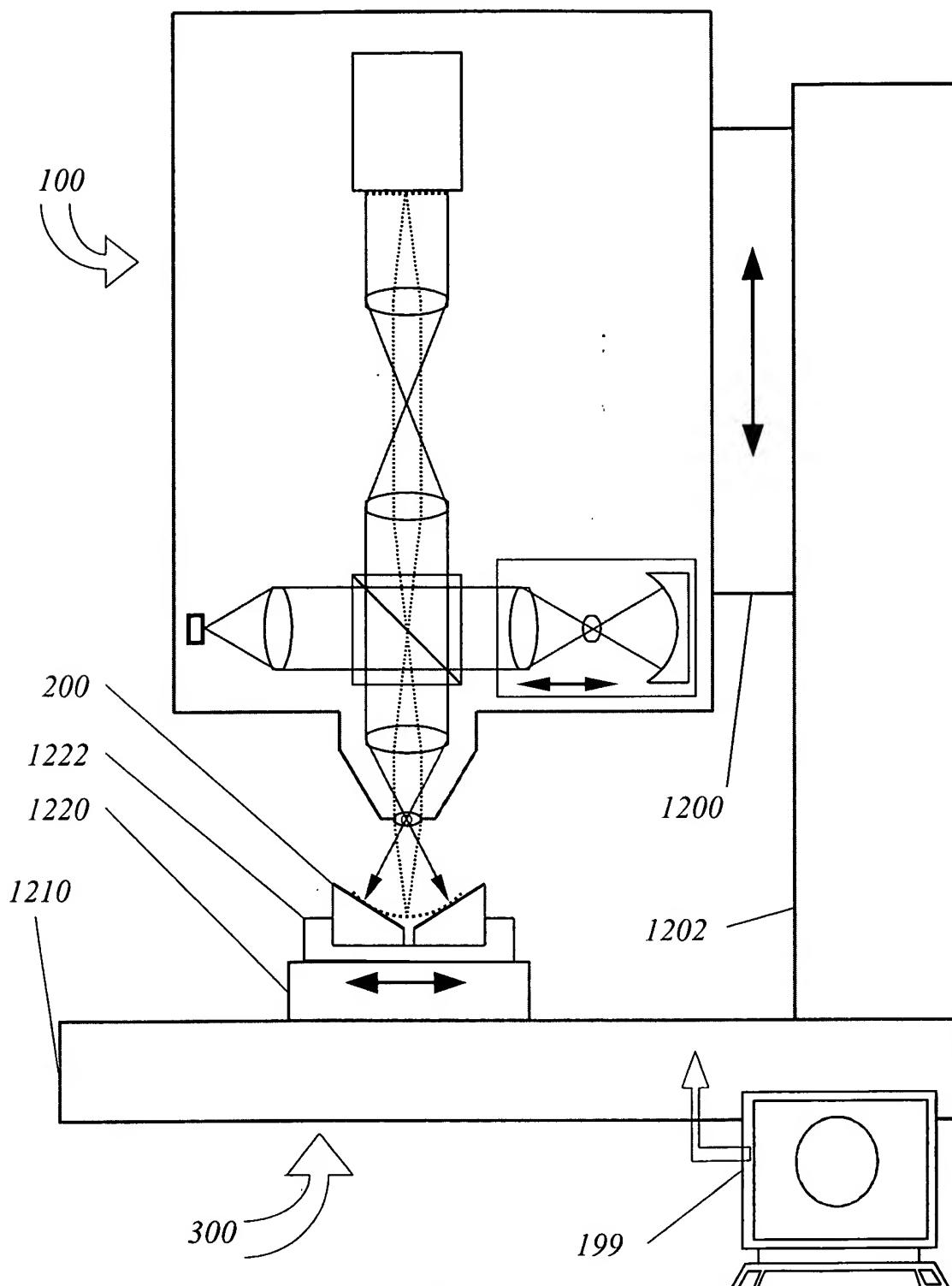


FIG. 3

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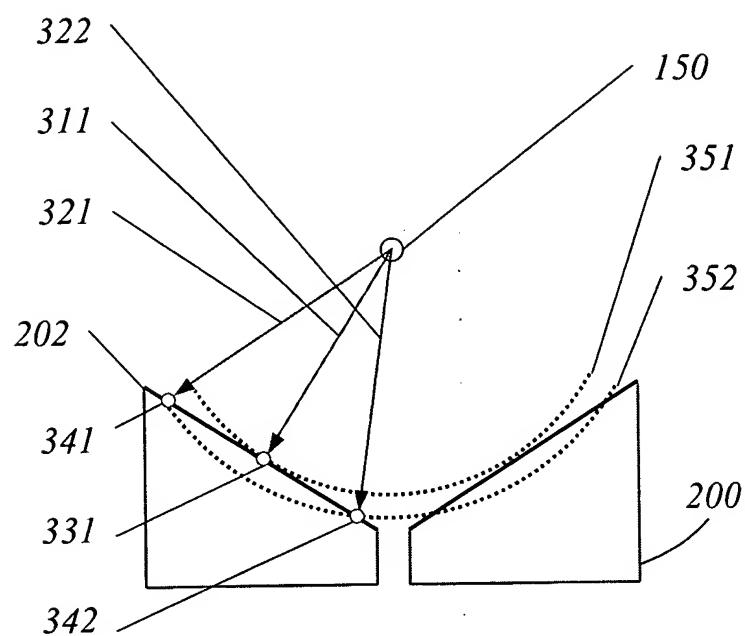


FIG. 4

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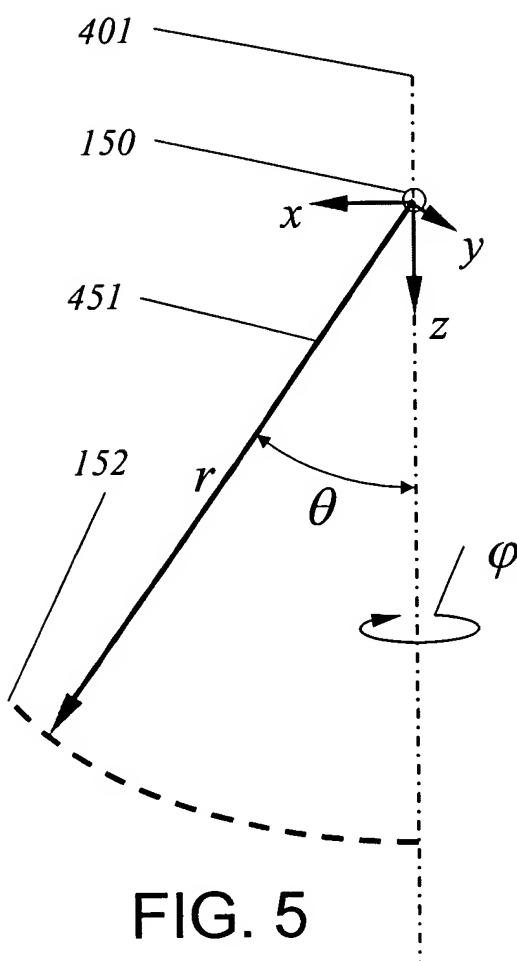


FIG. 5

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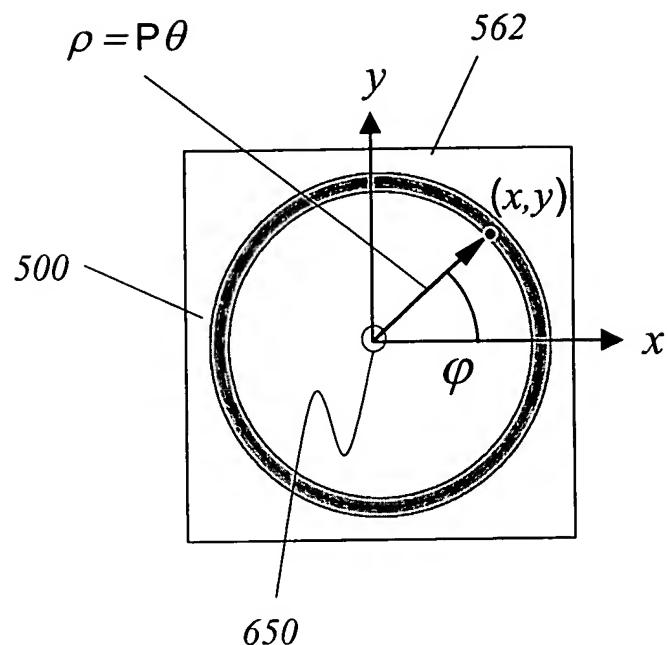


FIG. 6

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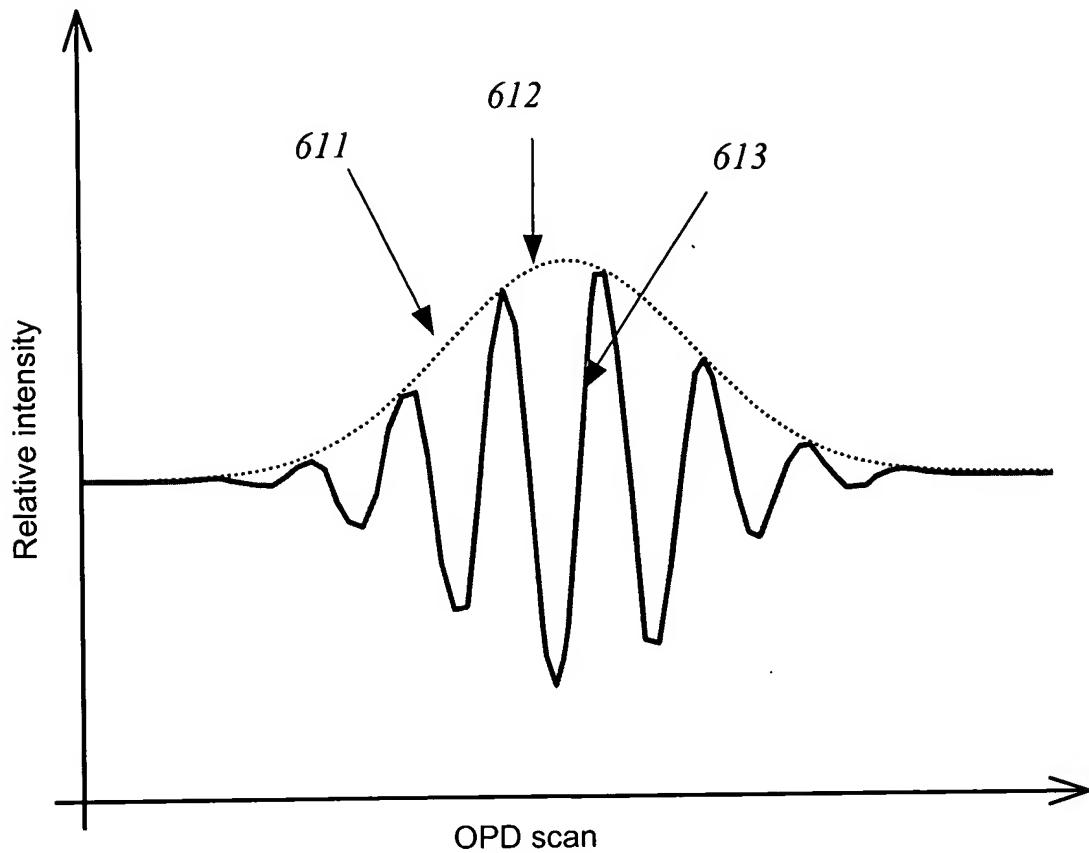


FIG. 7

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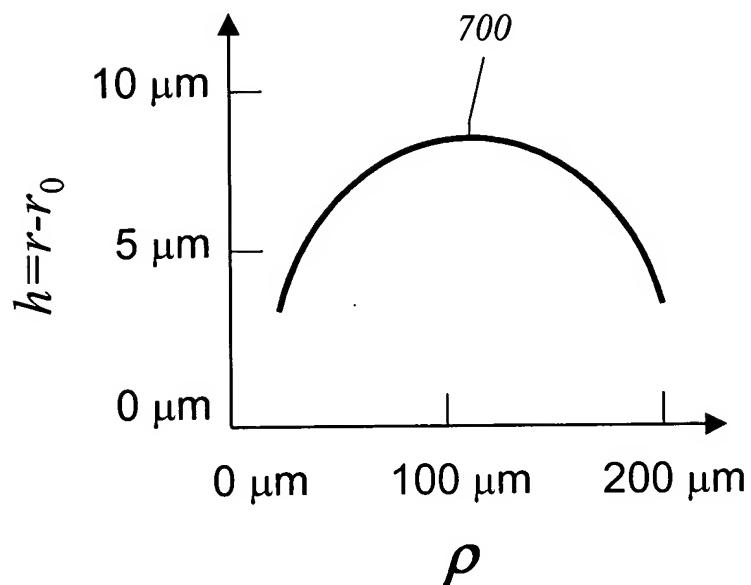


FIG. 8

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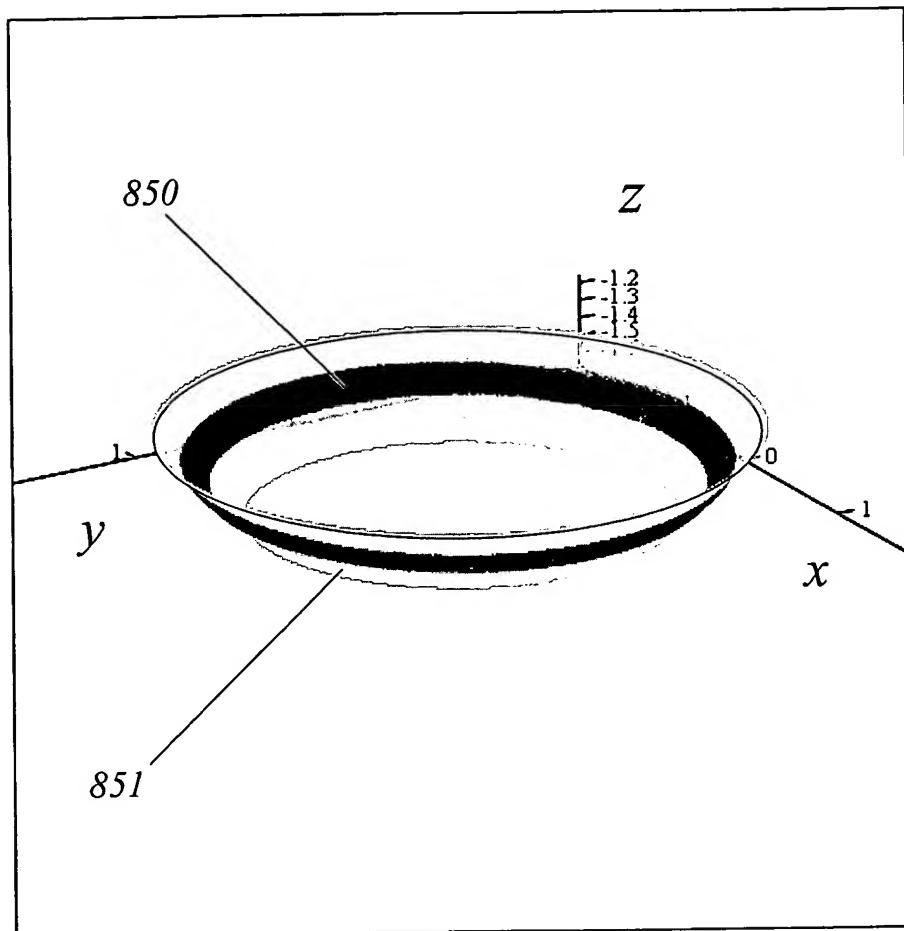


FIG. 9

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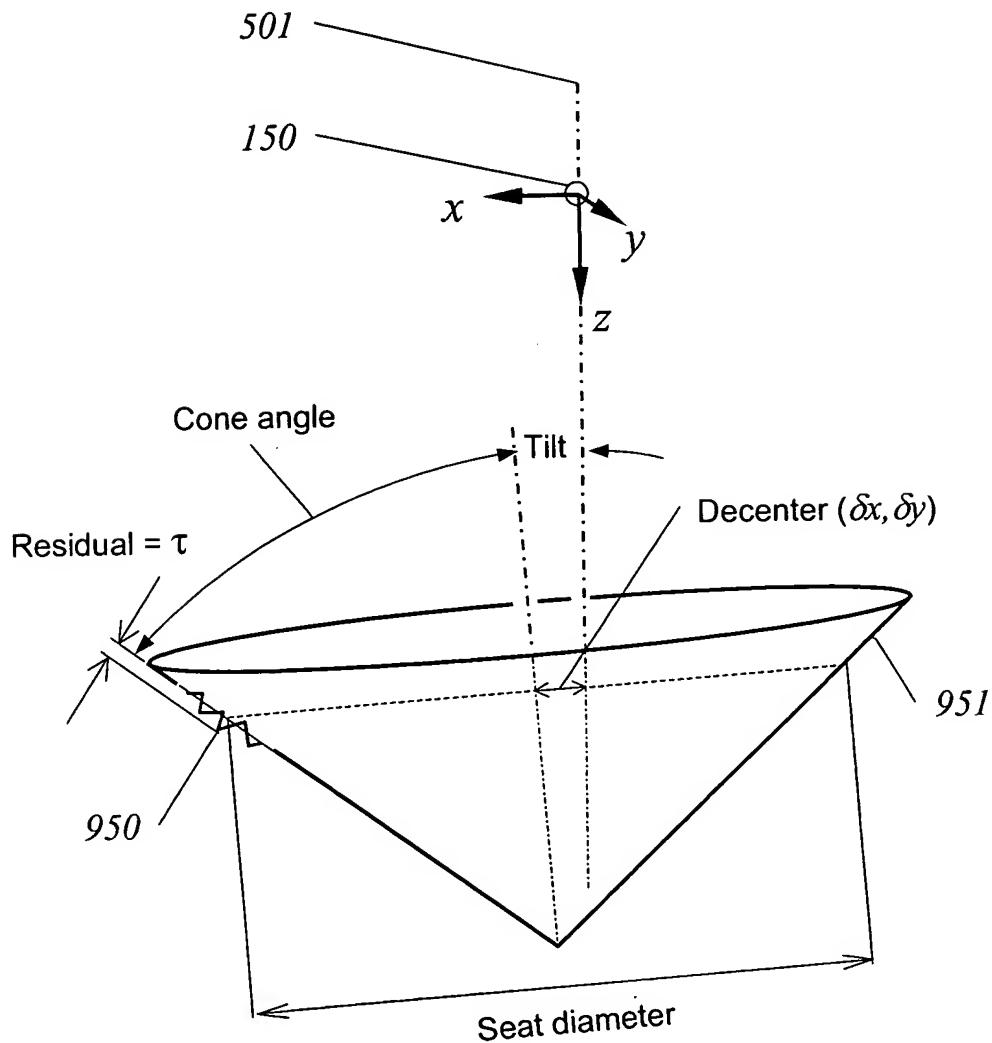


FIG. 10

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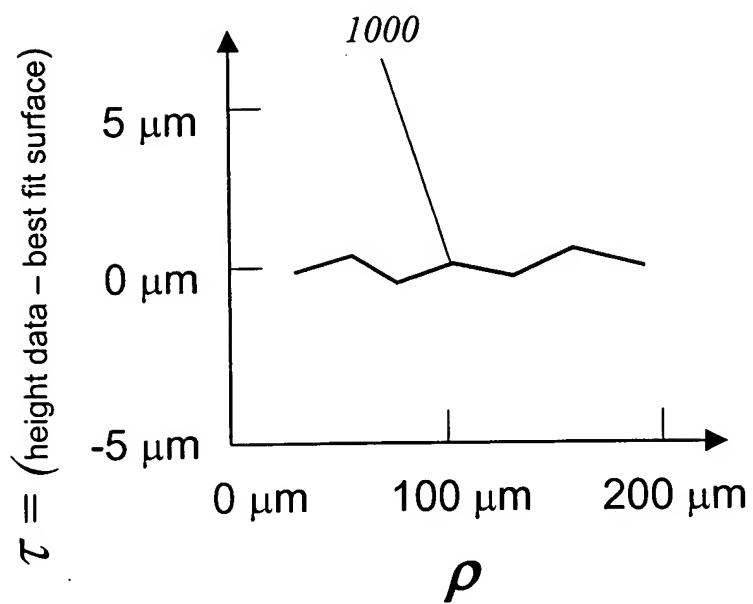


FIG. 11

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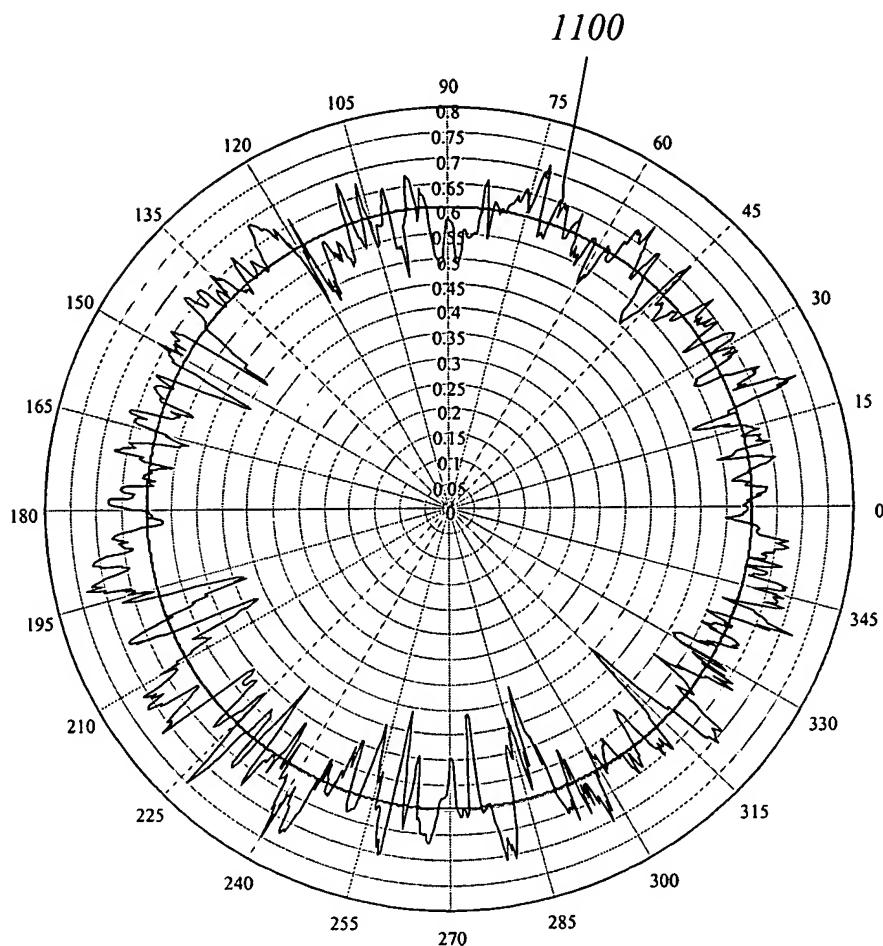


FIG. 12

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Put part into fixture

- If required, make coarse adjustments

Go to measurement position for part

- Move probe to measurement position (x,y,z), using known parameters plus any additional information from previous measurements

Acquire raw interference intensity data

- Scan OPD

Generate height data

- Process interference intensity to get relative distance from measurement surface to part surface for each image pixel

Transform to 3D coordinates

- Subtract System Error Map
- Transform height data into 3D Cartesian coordinate data (x,y,z) (requires calibration for absolute distance, optical axis location, lateral calibration)

Fit ideal part shape to measured shape

- Calculate best-fit of nominal ideal shape, e.g. perfect cone
- Report part center, cone axis angle, cone angle

N

Y

Calculate results

- Subtract best fit surface (e.g. ideal cone) from data
- Filter as required, e.g. to simulate stylus response
- Calculate roundness, straightness, roughness profiles

FIG. 13

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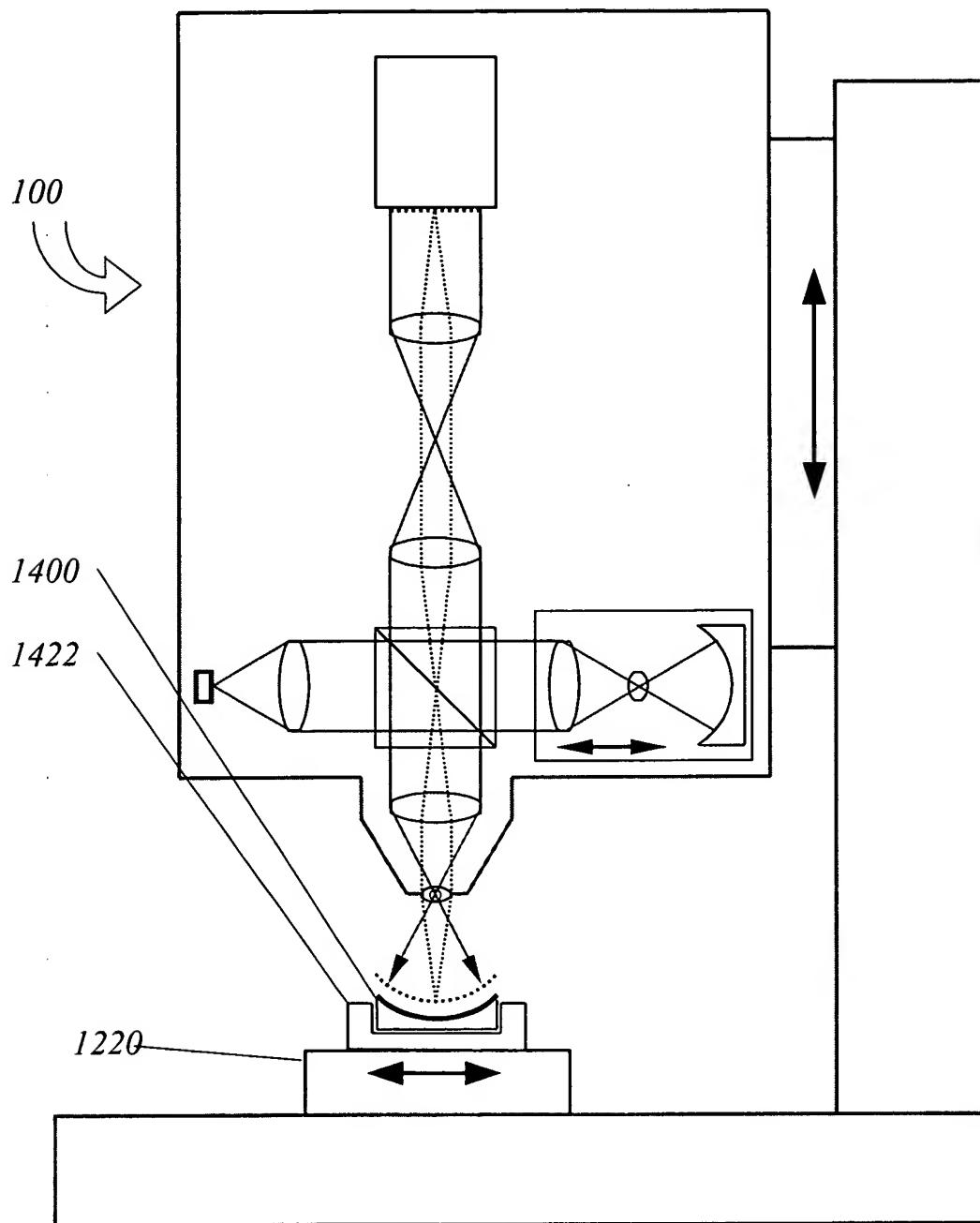


FIG. 14

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Put surface calibration artifact into fixture

- If required, make coarse adjustments

Go to measurement position for this artifact

- Move probe to measurement position (x,y,z) , using known parameters plus any additional information from previous measurements

Acquire raw interference intensity data

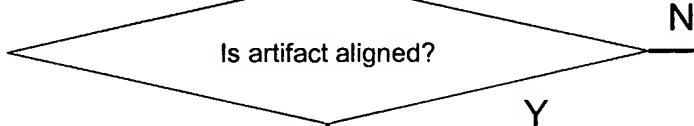
- Scan OPD

Generate height data

- Process interference intensity to get relative distance from measurement surface to part surface for each image pixel

Calculate surface location

- Subtract System Error Map
- Locate calibration surface with respect to optically generated measurement surface, e.g. optical datum point with respect to center of spherical artifact



Calculate results

- Subtract known artifact surface from data,
- Filter and store as system reference file
- Record calibration data, e.g., radius of measurement sphere

Optional angle calibration

- Use image processing functions to establish lateral calibration of field angle mapping onto camera (valid for artifact having inscribed lines at known angular positions)

FIG. 15

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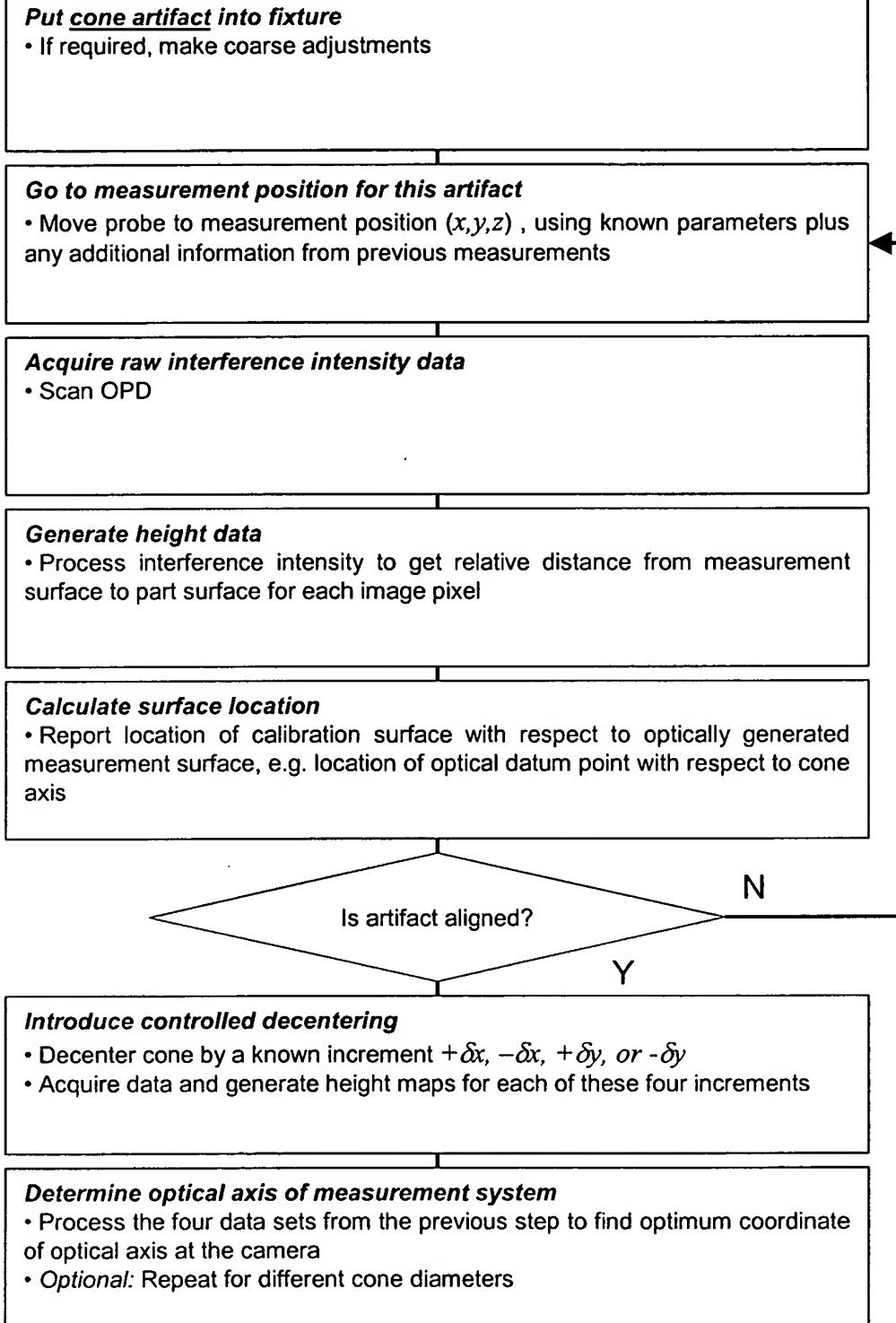


FIG. 16

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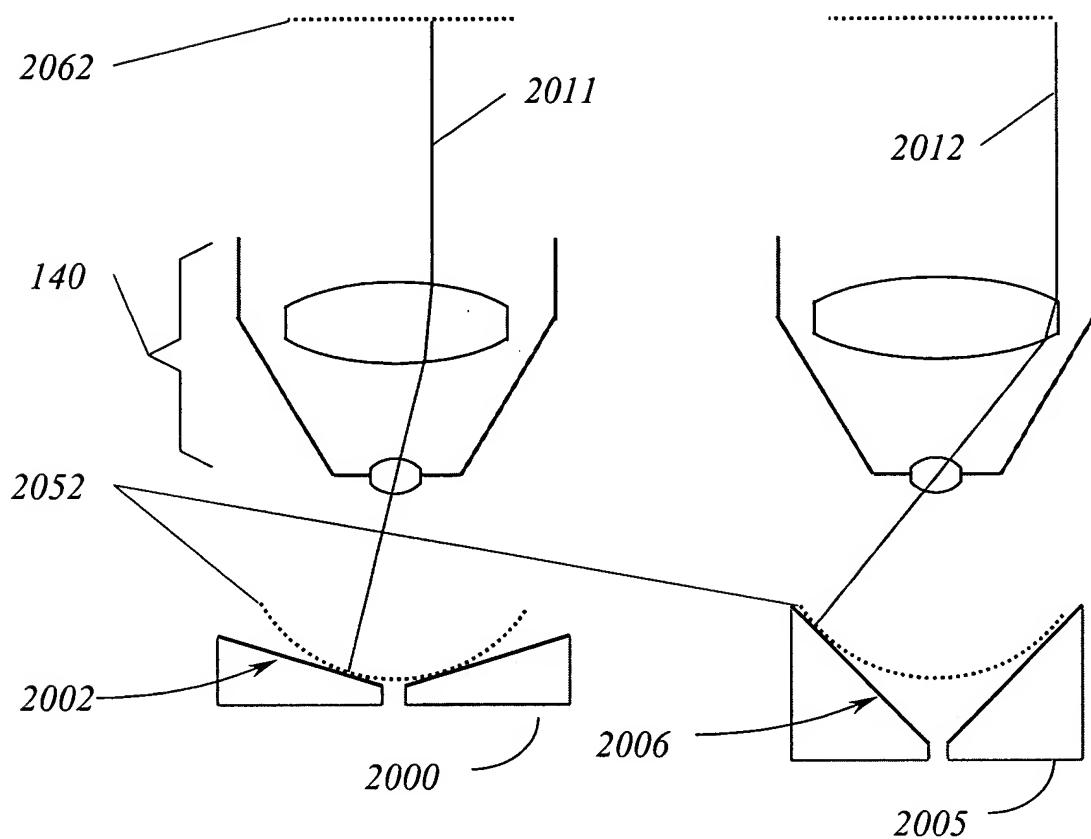


FIG. 17A

FIG. 17B

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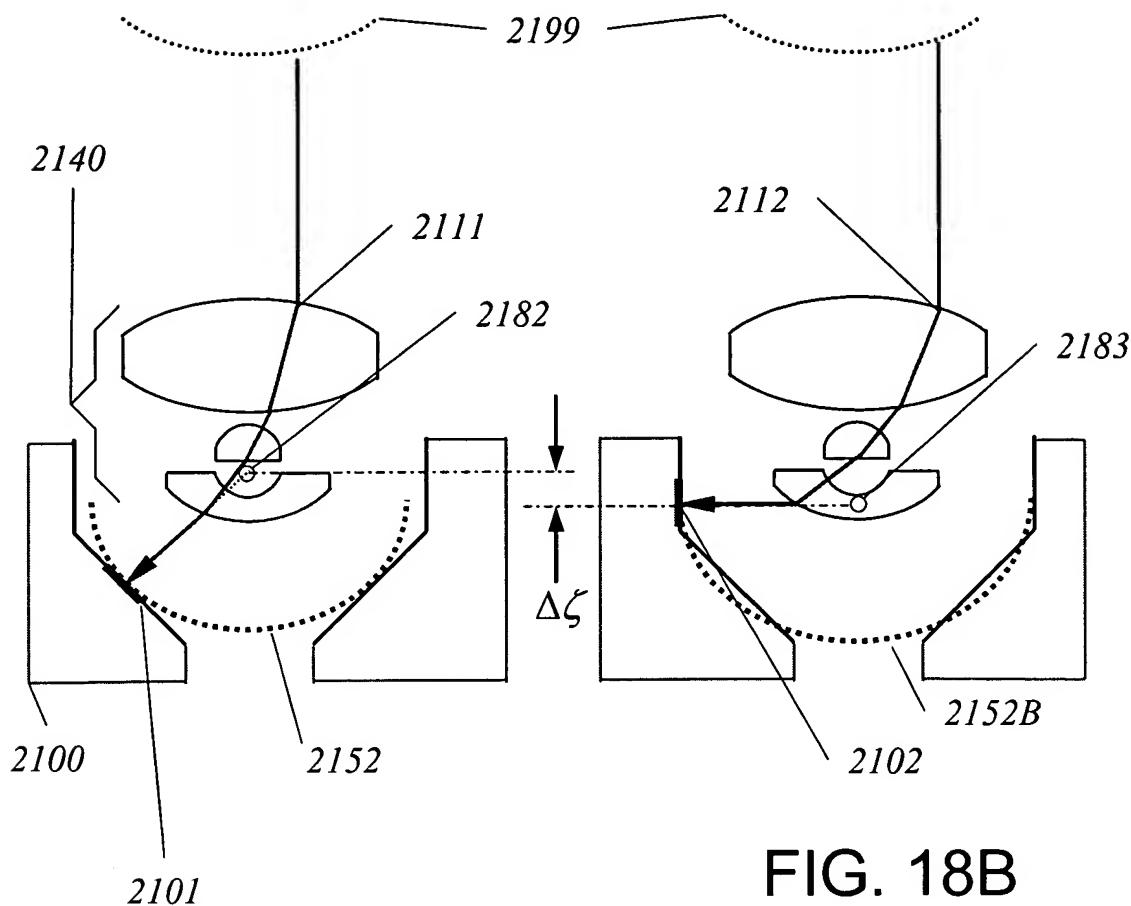
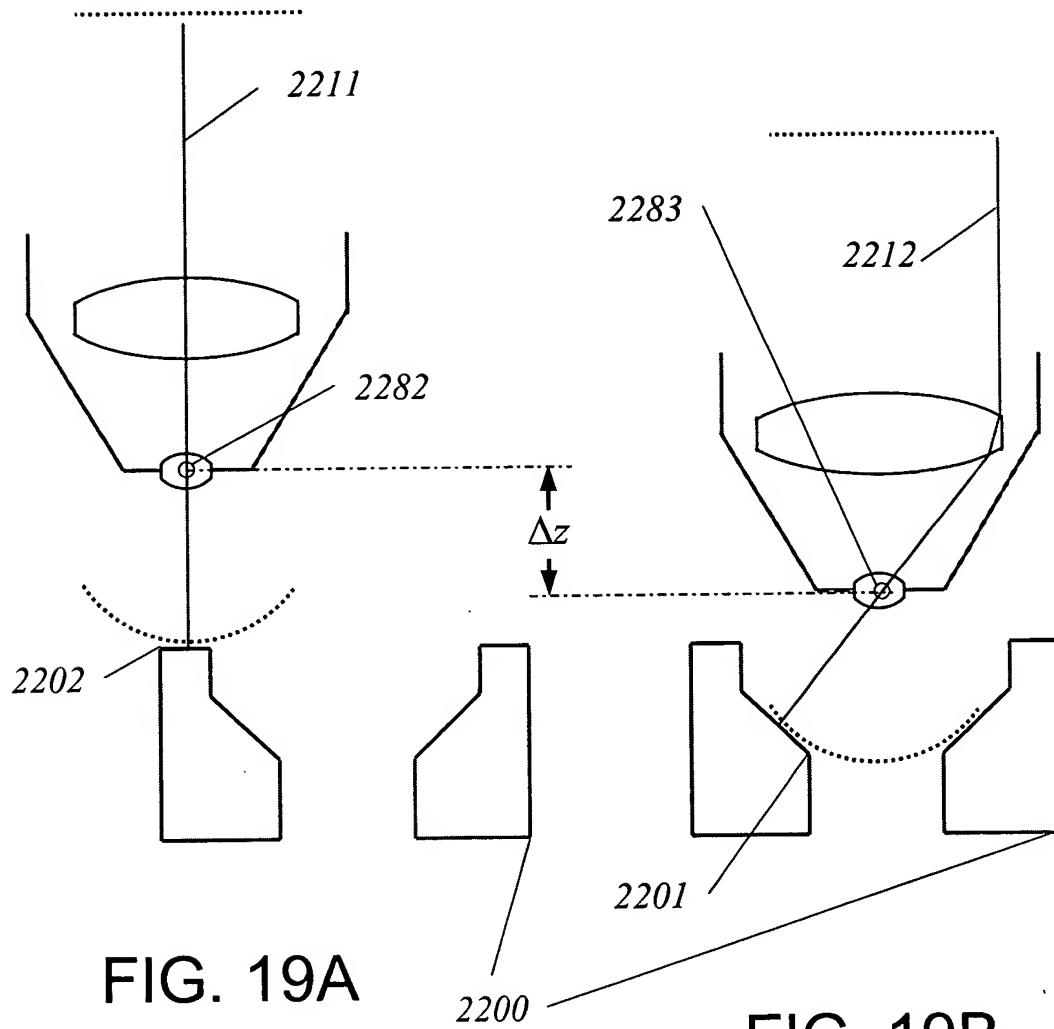


FIG. 18A

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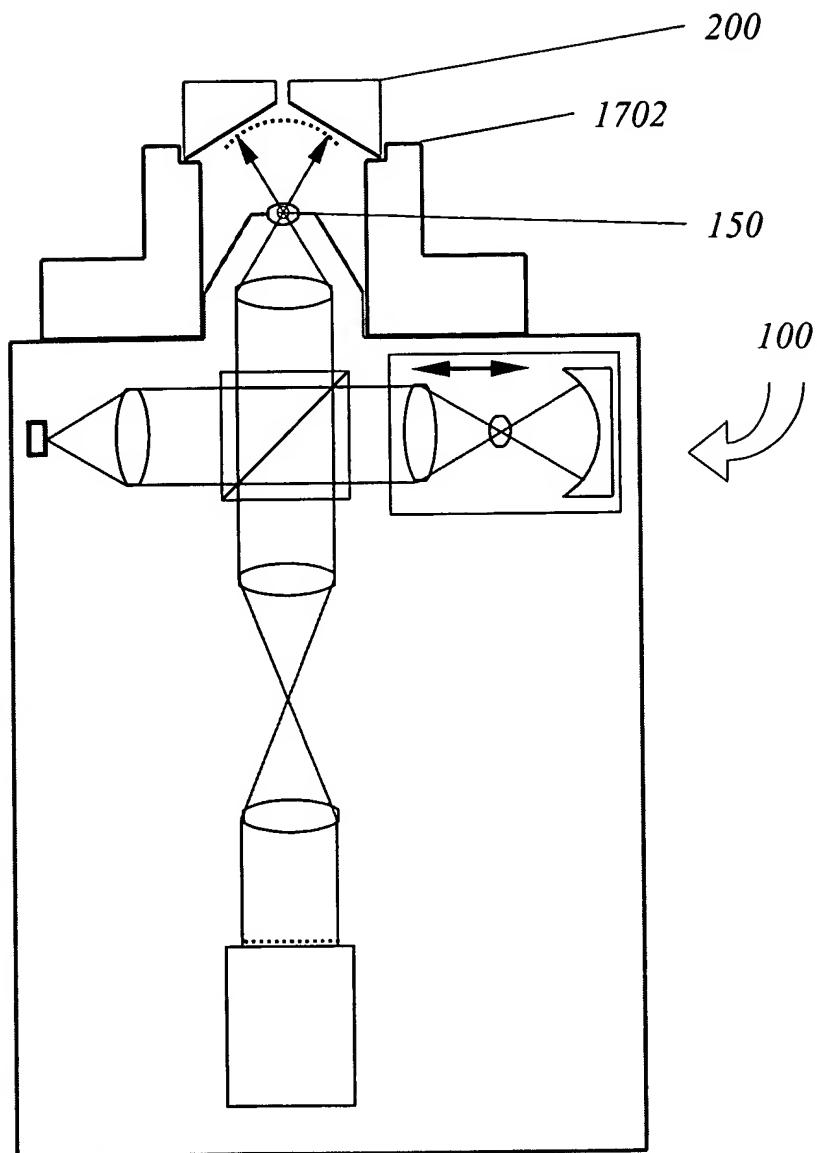


FIG. 20

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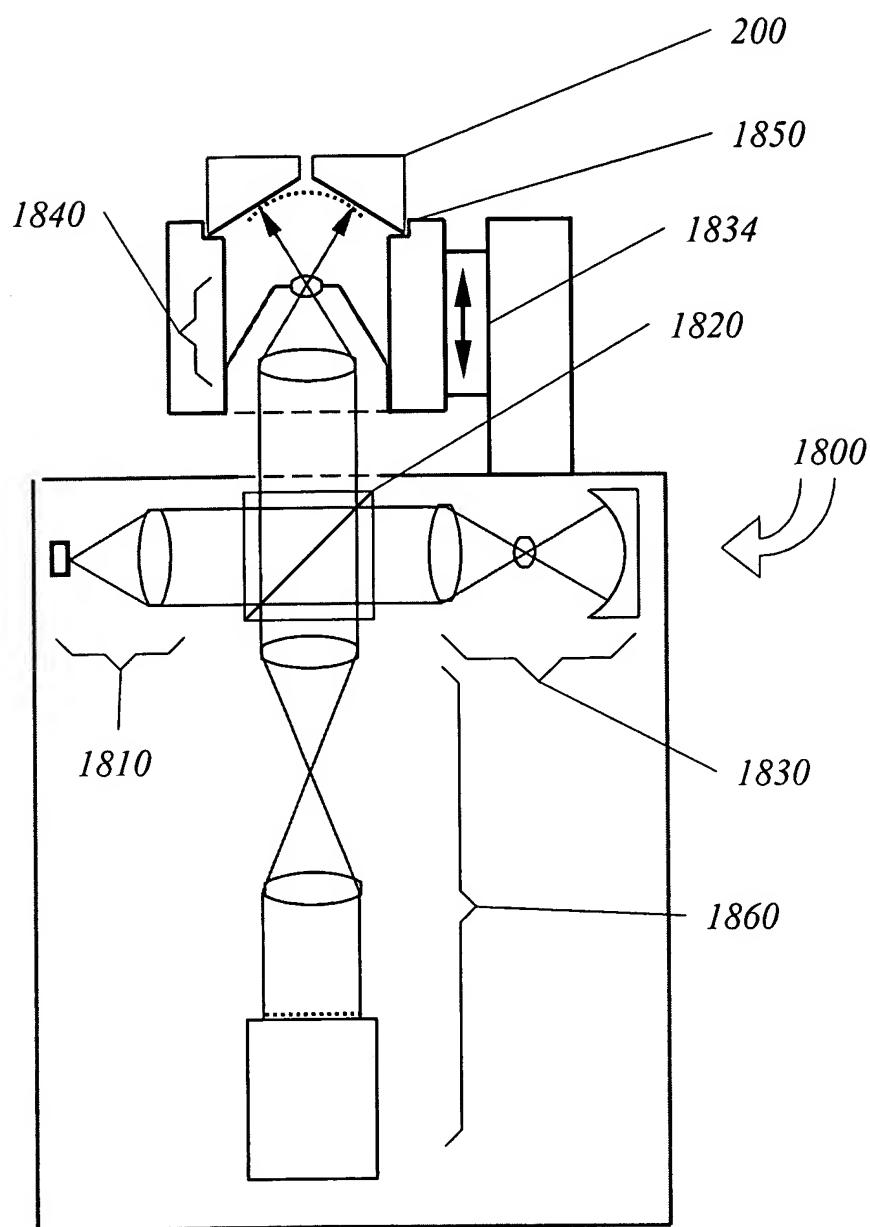
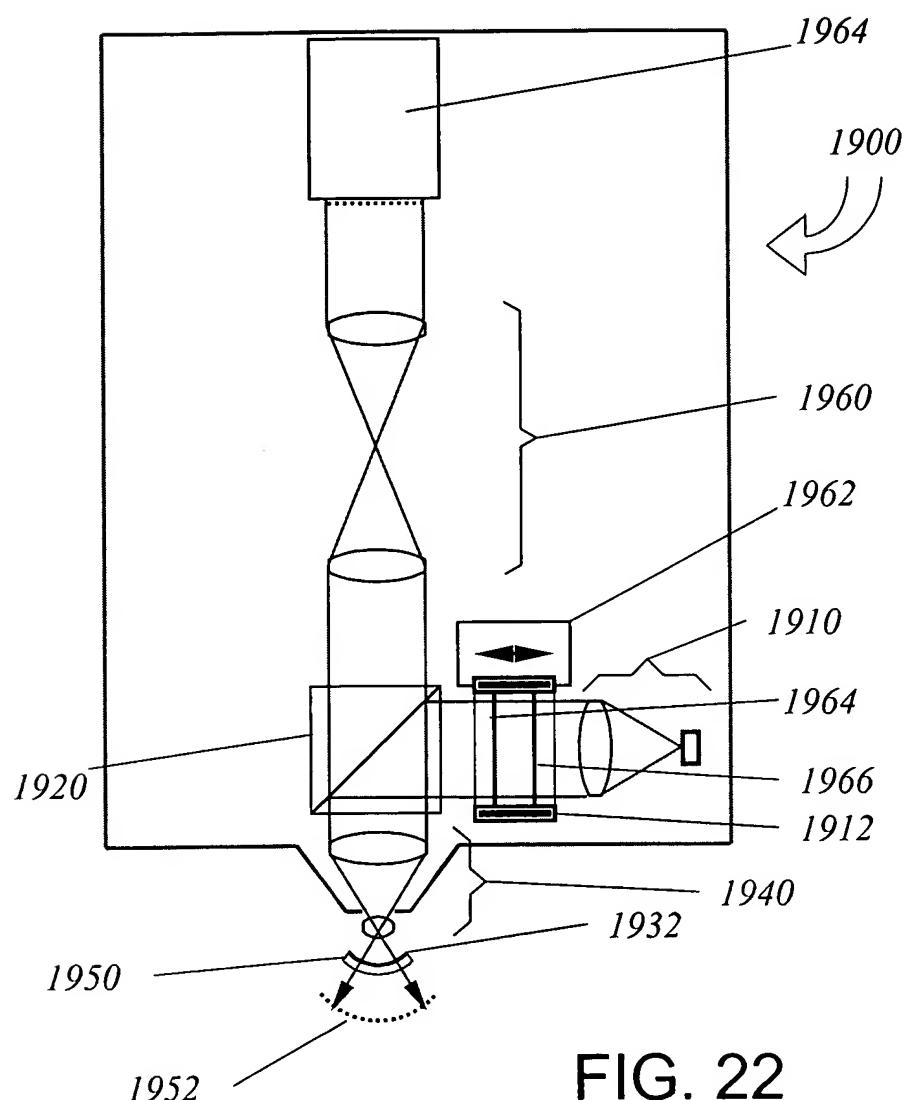


FIG. 21

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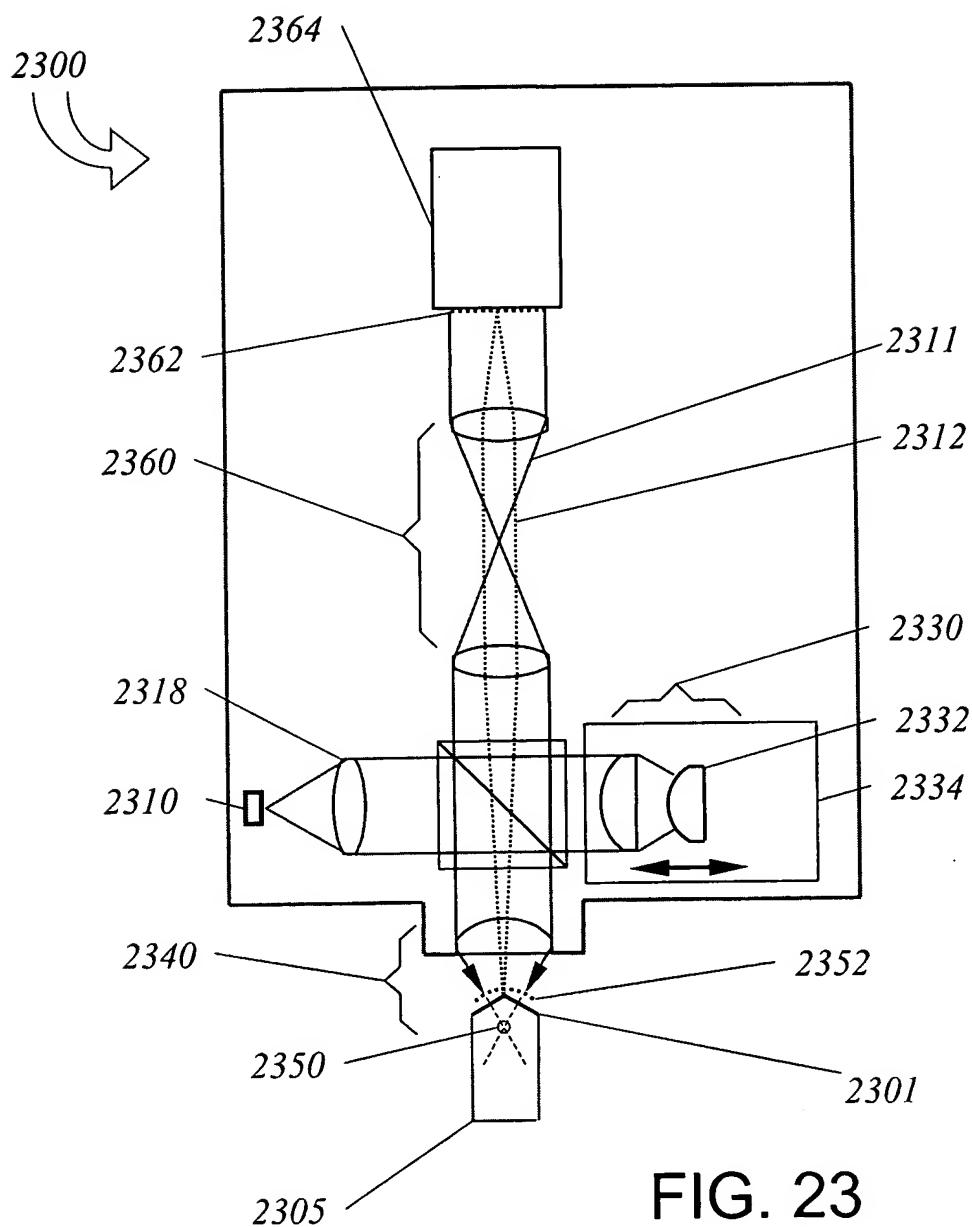


FIG. 23

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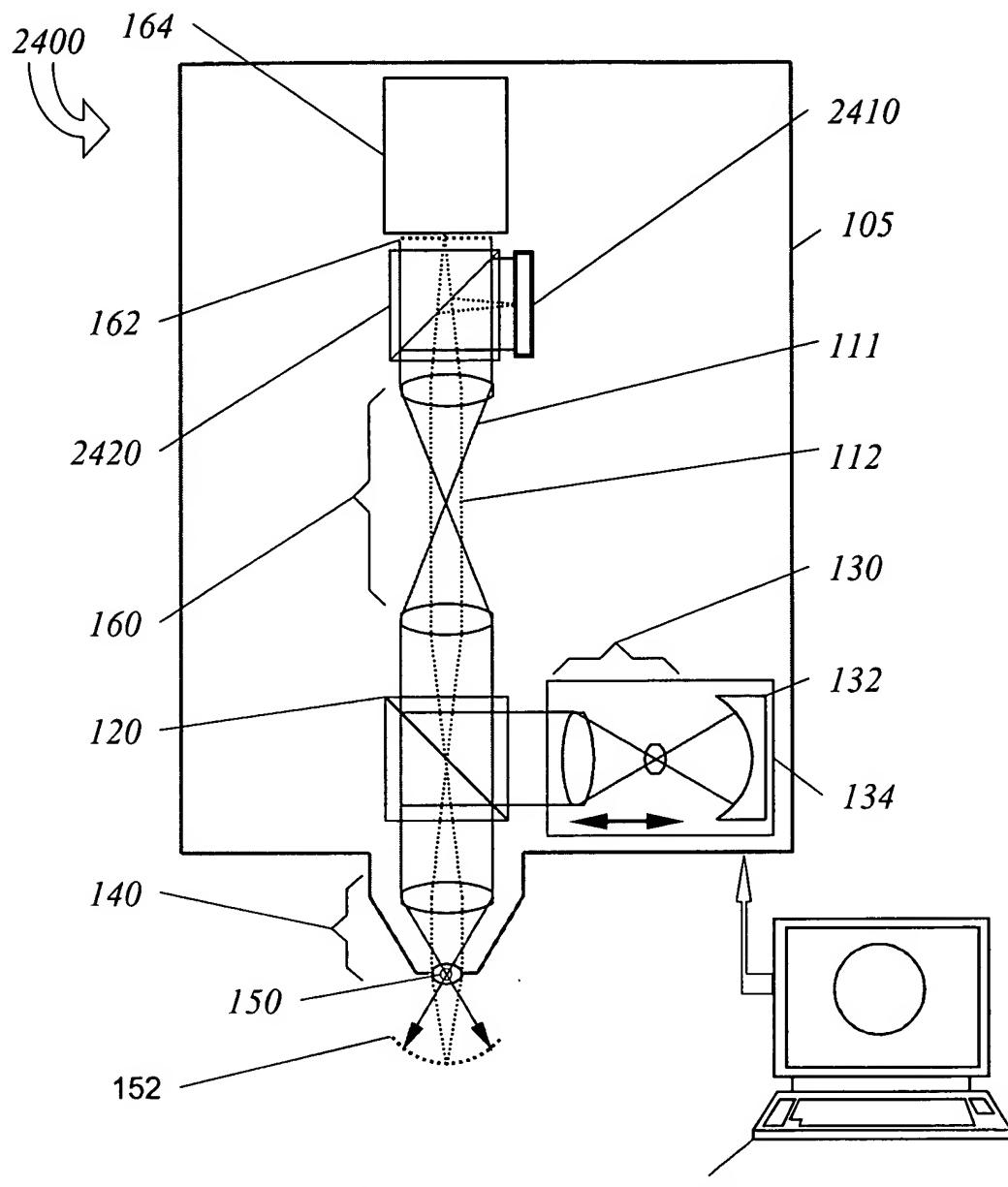


FIG. 24